SECTION 300.00 – INDEPENDENT ASSURANCE PROGRAM

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The Independent Assurance Program provides an unbiased and independent evaluation of all sampling and testing procedures used in the acceptance program. The basis for the program is 23 CFR, Part 637.

SECTION 310.00 – INDEPENDENT ASSURANCE EVALUATIONS

Independent Assurance (IA) evaluates sampling and testing procedures and equipment for acceptance and verification testing. IA testing supplements the acceptance sampling and testing but is not used directly for acceptance of materials.

Independent Assurance is not required on the contractor's quality control tests unless the quality control test results are used for acceptance. IA may be performed, when requested, for the contractor's quality control as time and resources permit.

Acceptance and verification samples and tests are the basis of materials acceptance. IA evaluations are used to assure that sampling and testing procedures, including test equipment, are within allowable tolerances. A comparison of the project test results with IA test results, when in close conformity, gives assurance that project sampling and testing is valid. If the results are not within the allowable tolerances then corrective action must be taken by project personnel, such as checking equipment for damage, reviewing sampling and testing procedures, or other corrective action as necessary.

The Resident/Regional Engineer, as well as the project inspectors, will notify the IA Inspector as soon as possible prior to production startup and throughout the project so the required IA evaluations can be scheduled.

SECTION 320.00 – DISTRICT INDEPENDENT ASSURANCE INSPECTOR

The Independent Assurance Inspector is part of the ITD District Materials staff. This inspector should have considerable experience in all phases of testing and inspection.

The duties of the District IA Inspector typically include:

1. Independent Assurance evaluations according to the IA Program.
2. Spot check during normal IA evaluations that project testing laboratories have a current certificate of qualification issued per the ITD Laboratory Qualification Program.
3. Spot check during normal IA evaluations that samplers and testers are WAQTC qualified and the samplers and testers are including their qualification number on test forms.
4. Spot check during normal IA evaluations and during intermediate and final record reviews that acceptance sampling and testing is being conducted randomly in accordance with contract specifications.
5. Evaluate ITD samplers and testers for miscellaneous field test methods and required qualifications not covered under WAQTC. See Section 380.00 for procedures and examples.
6. Conduct intermediate and final records reviews.
7. Perform District audit of Materials Summary Report (MSR). See Section 460.00.
8. Draft the project Final Materials Certification Letter for the District Materials Engineer’s review and the District Engineer's signature. See Section 470.00.
9. Assist in training samplers and testers on the project and WAQTC tester training as time permits.
10. Serve as District Radiation Safety Officer (DRSO) according to the ITD Radiation Program.

SECTION 330.00 – SELECTION AND FREQUENCY OF INDEPENDENT ASSURANCE EVALUATIONS

Independent Assurance evaluations should commence in accordance with the frequencies in the MTR tables (Section 270.00) and IA Tables 300.2 and 300.3. Independent Assurance evaluations are accomplished by either duplicate sample testing or by observation. ITD uses a modified project approach to measure whether IA requirements have been met which means each project must have evidence the required IA evaluations have been performed.

The IA evaluation should include all test methods performed, including sampling and splitting, during performance of the actual project tests whenever possible. Occasionally, it may be necessary for the project testing technician to obtain an additional sample or perform an additional test exclusively for the benefit of providing the IA evaluation duplicate sample or observation.

The IA evaluation must accurately follow the specified test methods and procedures as closely as possible. The WAQTC performance checklists may be used as guides for evaluation of each test method. Even small deviations should be pointed out to the testing technician to ensure accurate and consistent test results, as well as accurate field equipment evaluations.

The IA Inspector may be called upon to evaluate test methods and field test equipment when a dispute arises from the test results or during a QC/QA project when there is a verification evaluation t test failure. Additional duplicate samples and observations may be necessary for resolution.

330.01 Independent Assurance Evaluation by Duplicate Samples. The minimum frequency for IA evaluation for each project using duplicate samples is summarized in Table 300.2 and included in the MTR tables (Section 270.00) under each standard specification item. Test methods evaluated by duplicate samples are those where the IA Inspector has dedicated equipment to perform an independent test. The minimum frequencies are based on one (1) IA test for every twenty (20) acceptance tests.

Duplicate samples are collected and split under the District IA Inspector's observation for those samples taken to the District Materials Laboratory for testing. Alternatively, for tests evaluated on the project site such as concrete field tests, the IA Inspector collects and tests samples independently.

One IA duplicate, or split, sample may apply to multiple items and projects provided the items are being tested by the same tester and using the same test methods and equipment. It is intended, as long as the test method, tester and equipment are the same, IA test results within the frequency interval may apply to any number of projects and any number of items. An IA test report must be completed for each project and list each item to which the IA test or evaluation applies.

For example, Project A, Project B and Project C each have several concrete items. The IA Inspector performs a duplicate air, slump and unit weight test for the testing technician on Project A. The following week the same testing technician is performing the same air, slump and unit weight tests with the same equipment on Project B and at the end of the month is performing the same tests with the same equipment on Project C. The total quantity of all of the concrete items is 960 CY. The frequency limit from Table 300.2 is 2000 CY, therefore the IA test performed on Project A will apply to Project B and Project C. The IA Inspector completes a test report for Project B listing the concrete bid items and another report for Project C, also listing the concrete bid items. These reports reference the actual IA test performed on Project A.

The following procedures are to be followed on IA duplicate samples of aggregate:

1. The testing technician will take a single sample large enough to provide not less than two minimum-size samples after splitting. Sampling is to be observed by the District IA Inspector in accordance with AASHTO T 2.
2. The sample will be mixed and quartered or split into two approximately equal size "duplicate" samples. The District IA Inspector is to observe this procedure in accordance with AASHTO T 248.
3. One of the "duplicate" samples is to be tested by the testing technician for complete gradation, sand equivalent, cleanness value, or other specification field tests as applicable. The District IA Inspector is to carefully observe techniques employed by the testing technician during the testing of the field sample as often as scheduling permits. The District IA Inspector may need to review sampling and testing procedures with the testing technician and offer helpful suggestions at this time. The second portion of the sample is to be taken to the District Laboratory by the District IA Inspector and tested for the same series of tests.
4. The testing technician's results are submitted to the District Laboratory as soon as the tests are completed, giving complete identification of the sample, date sampled, testing technician's name, District IA Inspector's name, and identifying the test results as one of the "duplicate" samples taken in the presence of the District IA Inspector.
5. The District Laboratory will issue form ITD-857, Independent Assurance Test Report, showing both test results for comparison. In addition to the standard laboratory report distribution, an additional copy will be provided for the testing technician and the testing laboratory. The ITD Laboratory Qualification Program requires testing laboratories to keep a copy of each IA evaluation, therefore, every effort should be made by the project personnel to deliver a copy of the IA report to the testing laboratory.
6. See Section 360.00 Review of Independent Assurance Results for procedures for the test result comparisons.

330.02 Independent Assurance Evaluation by Observation. It is necessary to evaluate some test methods by observation since the IA Inspector does not have dedicated equipment to perform an independent test. IA observation evaluation frequencies for each project are summarized in Table 300.3 and included in the MTR tables (Section 270.00) under each standard specification item.

An IA observation may be valid for up to 90 days. A single IA observation may apply to multiple items and projects provided the items are being tested by the same tester and using the same test methods regardless of quantity of material for up to 90 days. An IA test report must be completed for each project and list each item to which the IA observation evaluation applies.

The IA Inspector must use judgment in applying the 90-day rule and thoroughly evaluate the testing technician performing each test method involved. The IA Inspector is encouraged to use the WAQTC performance checklists as a guide for the evaluation. The 90-day rule would apply to only those test methods evaluated.

After the initial thorough IA observation evaluation is complete, the level of oversight and observation required for use of the 90-day rule is at the discretion of the IA Inspector. There should be a remark on the IA evaluation form, ITD-857, to indicate the IA Inspector’s decision when applying the 90-day rule. The remark may be based on the experience level of the testing technician, consistency of the material being tested or other information to support the IA Inspector’s decision to apply the 90-day rule.

330.03 Independent Assurance Evaluation of Verification Tests. ITD testing technicians perform verification testing in accordance with the Quality Assurance specifications when the contractor performs acceptance testing. These verification tests require IA evaluations. The frequency for IA evaluations will be one (1) IA evaluation for every twenty (20) verification tests. One IA evaluation may apply to multiple items and projects within the frequency provided the items are being tested by the same tester and using the same test methods and equipment.

SECTION 340.00 – TESTING OF DUPLICATE INDEPENDENT ASSURANCE SAMPLES

The testing of IA samples is to be done at the District Materials Laboratory, except for tests such as concrete slump and air tests that are performed in the field immediately after the sample is taken. IA samples must be tested with equipment other than that used for project acceptance testing.

SECTION 350.00 – NUMBERING INDEPENDENT ASSURANCE EVALUATIONS

IA tests will be numbered according to the first 3 or 4 characters of the bid schedule item, such as 205F, 303 or 405, followed by the letters IA and ending with the sequential number, starting at 1 and corresponding to the number of IA tests for the contract item. The sequential numbering will begin over with each contract. Contract special provision items will use the SP number for the bid schedule item number and change order items will use the CO number for the bid schedule item number.

SECTION 360.00 – REVIEW OF INDEPENDENT ASSURANCE RESULTS

The IA results are evaluated to assure the dependability and accuracy of the project sampling and testing, and to evaluate the test equipment.

360.01 Duplicate Sample Test Results. The IA duplicate test results and the field test results from the other half of the split sample are reported on form ITD-857 and compared. The comparison is made to determine whether the results are within allowable variations per Section 390.00.

When the test result comparison indicates the results are within allowable tolerances, the ITD-857 is printed on white paper and normal distribution as shown on the form is made.

If the evaluation indicates the results are not within allowable variation, another duplicate sample is obtained as soon as possible for a retest. The retest must be performed by the same testing technician and the same testing equipment must be used. The retest results will be reported on the same ITD-857 as the original duplicate test and a comparison made. If the comparison indicates the retest results are within allowable tolerances then the ITD-857 will be printed on white paper with normal distribution made.

If the comparison indicates the retest results continue to not be within allowable tolerances then the ITD-857 will be printed on buff colored paper and immediately forwarded to the ITD project representative or Resident/Regional Engineer for close-out with the IA Inspector.

When it is not possible to obtain another duplicate sample for retest, such as, the project is completed, then the ITD-857 showing the first duplicate test will be printed on buff paper and immediately forwarded to the ITD project representative or Resident / Regional Engineer for close-out with the IA Inspector.

360.02 Review of Observation Results. IA observations are documented on form ITD-857, District Independent Assurance Inspector's Report Field Evaluation. The evaluation report is completed as an observation with a duplicate sample taken or as an observation alone. Any deviations in the sampling and testing procedures observed will be documented by the IA Inspector. The report will then immediately be forwarded to the project office for close-out with the IA Inspector.

Completed and signed copies of all IA reports will immediately be sent to the project engineer, personnel responsible for sampling and testing, and the laboratory performing the testing.

360.03 Close-out Comments and Resolution Statement. When a deviation or out-of-tolerance result is identified, a close-out will be held with personnel performing the sampling and testing and an ITD project person responsible for the testing technicians.

A resolution statement signed by project personnel as indicated below is required when an IA evaluation indicates any of the following deviations:

- duplicate test results are not within acceptable variation,
- deviations in sampling and testing procedures observed,
- nonqualified samplers and testers are identified performing tests on a project,
- nonqualified laboratories are identified in use on a project,
- acceptance sampling and testing is not being conducted randomly in accordance with contract specifications.

The IA Inspector identifies deviations and works with project personnel to identify the cause of the variation. The project personnel are responsible to institute corrective action to resolve the deviations. A resolution statement will be written, or concurred with by signature, by an ITD project person responsible for the sampling and testing procedures and personnel. Usually this will be a project on-site inspector, but may also be the Resident Engineer. The resolution statement will indicate the corrective action that will take place or the corrective action that has already been enacted to prevent the deviation on subsequent sampling and testing. The action may include replacing faulty equipment, additional supervision of testing technicians and/or suspension of testing until necessary qualifications are met.

The Independent Assurance Inspector should review any resolution statement that does not indicate satisfactory resolution of the deviation with the District Materials Engineer. The District Materials Engineer should work with the Regional/Resident Engineer or other District Management as necessary to obtain a satisfactory resolution.

When the resolution statement is provided separately and not written directly on the IA report form, there will be a reference to the statement on the IA report in case the attachment becomes separated from the report form.

SECTION 370.00 – INDEPENDENT ASSURANCE TEST LOG (ITD-860)

All IA evaluations are recorded on the ITD-860, Independent Assurance Test Log, for each project by the Resident Engineer's office. Those IA evaluations identified as out-of-tolerance must have the resolution recorded as well. Use a blank line immediately below the recorded IA evaluation to briefly state the resolution. The IA Test Log is submitted at the completion of the project as part of the Materials Summary Report to HQ Materials for review.

SECTION 380.00 – INDIVIDUAL QUALIFICATION FOR NON-WAQTC TEST METHODS

An individual qualification is necessary for those test methods not included in the WAQTC qualification as shown in Table 300.1 below. The District IA Inspector will evaluate and qualify the ITD testing technicians performing tests on ITD projects. Performance checklists may be obtained from HQ Materials for use during evaluation of each test method. The ITD testing technician, or their supervisor, is responsible to schedule the evaluation and qualification with the District IA Inspector. The individual qualification is valid for five (5) years. The District will provide a qualification certificate to the individual.

Contractors are responsible for qualification of their testing technicians, per AASHTO T 176, Section 8 Operator Qualification, when performing sand equivalent acceptance testing using either the manual method or hand method. The Contractor is responsible for documentation of the evaluation and qualification of the testing technician by a WAQTC-qualified tester.

Table 300.1 Test Methods Not Qualified By WAQTC

Test Method	Test Reference	Notes For Qualification
Sand Equivalent (performed by manual method or hand method)	AASHTO T 176	Evaluation must be determined using mechanical shaker prior to performing tests. IAI will verify the tester holds a current qualification. See Section 275.00
Cleanness Value	Idaho T 72	Evaluation may be determined at time of actual testing.
Saybolt Viscosity	Idaho T 61	Evaluation may be determined at time of actual testing.
Anti-strip Detection	Idaho T 99	Evaluation may be determined at time of actual testing.

300.2 Minimum Frequency for IA Evaluations by Duplicate Samples (split samples)

Bid Schedule Item No.	Item Description	Tests (including sampling & splitting)	Frequency Of IA Duplicate Tests Recommended To Test Within The First Five (5) Days	
			English	Metric
205	Granular Borrow	Sand Equivalent (AASHTO T 2, T 248, T 176)	200 000 CY	150 000 m^3
301	Granular Subbase	Gradation, SE (AASHTO T 2, T 248, T 27, T 176)	110 000 tons	100 000 t
302	Emulsion Treated Base	Gradation, SE (AASHTO T 2, T 248, T 11, T 27, T 176)	14 000 CY /20 000 tons	10 000 m^3/18 000 t
303	Aggregate Base	Gradation, SE (AASHTO T 2, T 248, T 11, T 27, T 176)	14 000 CY/20 000 tons	10 000 m^3/18 000 t
307	Open-Graded Rock Base	Gradation (AASHTO T 2, T 248, T 27)	14 000 CY/20 000 tons	10 000 m^3/18 000 t
403/404	Cover Coat Material	Gradation, CV, Fracture (AASHTO T 2, T 248, T 11, T 27, TP 61, Idaho T 72)	5 600 CY/8 000 tons	4000 m^3/7200 t
405	Plantmix Aggregate @ Cold Feed (Acceptance Test Strip)	SE, Fracture, Fine Aggregate Angularity, Flat and Elongated (AASHTO T 2, T 248, T 176, TP 61, ASTM D 4791, T 304)	15 000 tons	13 500 t
406/407	Road Mix /Scrub Coat Aggregate	Gradation, SE, Fracture (AASHTO T 2, T 248, T 11, T 27, T 176, TP 61)	14 000 CY/20 000 tons	10 000 m^3/18 000 t
412	Plant Mix Seal Aggregate	Gradation, SE, Fracture (AASHTO T 2, T 248, T 11, T 27, T 176, TP 61)	15 000 tons	13 500 t
409	PCC Pavement Aggregate	Gradation, (course and fine plus SE on fine) (AASHTO T 2, T 248, T 11, T 27, T 176)	13 400 CY	10 000 m^3

300.2 Minimum Frequency for IA Evaluations by Duplicate Samples (split samples) (Continued)

Bid Schedule Item No.	**Item Description**	**Tests (including sampling & splitting)**	**Frequency Of IA Duplicate Tests Recommended To Test Within The First Five (5) Days**	
			English	**Metric**
409	PCC Production	Field tests** (WAQTC TM 2, AASHTO T 119, 152, 309, 121)	6 000 CY	4600 m^3
502, 506, 510	Concrete (Production) Aggregate	Gradation, (course and fine plus SE on fine) (AASHTO T 2, T 248, T 11, T 27, T 176)	6 000 CY	4600 m^3
502, 506, 510	Concrete (Production)	Field Tests** (WAQTC TM 2, AASHTO T 119, 152, 309, 121)	2 000 CY	1500 m^3

**Field tests: Air, slump, temperature, and unit weight.

300.3 Minimum Frequency for IA Evaluations by Observation

Bid Schedule Item No.	**Item Description**	**Tests Evaluated**	**Frequency Of IA Observation Evaluations - * Recommended To Observe Within The First Five (5) Days**
205	Excavation, Borrow, Granular Borrow	Development of Density Standard & In-place Density (AASHTO T 99, T 180, T 224, T 272, T 310)	Every 90 days /One (1) per project
210	Compacting Backfill for structure, retaining wall, or pipe backfill	Development of Density Standard & In-place Density (AASHTO T 99, T 180, T 224, T 272, T 310)	Every 90 days /One (1) per project
301	Granular Subbase	Development of Density Standard & In-place Density (AASHTO T 180, T 224, T 272, T 310, Idaho T 74)	Every 90 days /One (1) per project
302	Emulsified Treated Base	Development of Density Standard & In-place Density (AASHTO T 180, T 224, T 272, T 310, Idaho T 74)	Every 90 days /One (1) per project
303	Aggregate for Base	Development of Density Standard & In-place Density (AASHTO T 180, T 224, T 272, T 310, Idaho T 74)	Every 90 days /One (1) per project
403 / 404	Emulsified Asphalt	Saybolt Viscosity (Idaho T 61)	Every 90 days/One (1) per project
405	Plant Mix Acceptance Test Strip	Loose Mix Sample Testing & Core Bulk Density (AASHTO T 168, T312, T247,T246,T 166 Method A, T 275,T 209,T 269,T 308,T 30, T 329, WAQTC TM 5, AASHTO T 166 Method C/A,T 275)	Every 90 days / One (1) per project
405	Plant Mix Pavement	Sampling Loose Mix , Asphalt Content by Ignition Method, Gradation, Fracture (AASHTO T 30, T 168, T 308, T 329,WAQTC TM 5,TP 61)	Every 90 days /One (1) per project
405	Plant Mix Pavement	Density (percent compaction) (WAQTC TM 8)	Every 90 days /One (1) per project
409 & 502	Concrete Production	Making cylinders (AASHTO T 23)	Every 90 days /One (1) per project
506 & 510	Concrete Production	Making cylinders (AASHTO T 23)	Every 90 days /One (1) per project

* Refer to Section 330.02 for use of 90-day rule for IA evaluations by observation.

SECTION 390.00 – ACCEPTABLE VARIATIONS IN DUPLICATE TEST RESULTS

Allowable variations described in 390.01 & 390.02 apply to the following:

- properly sampled and split material to make duplicate portions for testing and tests conducted at the same time on the same material, such as concrete field tests.

These variations do not provide for material variations that occur when separate samples are taken some time apart. Variations occurring which exceed the listed duplicate test variations are to be brought to the attention of the Regional Engineer/Resident Engineer immediately.

> THESE VARIATIONS ARE NOT TO BE CONSIDERED ALLOWABLE TOLERANCES TO ACCEPT MATERIALS OUTSIDE SPECIFICATION LIMITS.

390.01 Aggregate. The difference between the "duplicate" samples should not exceed the variations listed in Table 300.4.

390.02 Concrete. When duplicate tests on a single sample of concrete are taken, the results should not vary more than the following:

- Air Content----------0.5%
- Slump----------3/4" (19 mm)
- Density for Yield----------1.0 lb./ft.^{3}(16 kg/m^3)
- Temperature----------2^{o}F (1^{o}C)

300.4 Aggregate Sample Variations

Material	1" (25 mm) or larger 3/4" (19 mm)	1/2" (12.5 mm) 3/8" (9.5 mm)	No. 4 (4.75 mm)	No. 8 (2.36 mm) No. 16 (1.18 mm)	No. 30 (600 µm)	No. 50 (300 µm) No. 100 (150 µm)	No.200 (75 µm)
Coarse Concrete Aggregate	8%	6%	5%	3%			
Fine Concrete Aggregate				3%		3%	2%
Treated, Untreated Base and Road Mix Surfacing	8%	6%	5%	3%	3%	3%	2%
Plant Mix Aggregate	8%	6%	5%	3%	3%	3%	2%
Granular Subbase & Rock Cap	8%		5%				2%
Cover Coat Material		6%	5%				
Anti-Skid Material		6%	5%	3%	3%	3%	

Sand Equivalent---------- 8

Cleanness Value ---------- 6

Fracture Count ---------- 5%

Flat & Elongated----------2%

Fine Aggregate Angularity----------1%